

# AQUATIC TRENDS AND CONSIDERATIONS FOR CITY OF DURHAM AQUATIC MASTER PLAN

Presented by:

RATIO and Counsilman-Hunsaker

August 2016

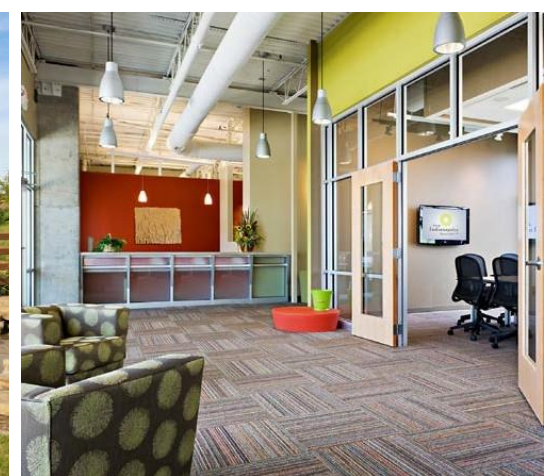


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# Counselman-Hunsaker

45 Years of Experience

27 Team Members

- Swimmers
- Pool Managers
- Waterpark Enthusiast

4 Locations: St. Louis, LA, Denver, Dallas

1000+ Aquatic Facility Design

200+ Aquatic Facility Studies

30+ Athletic Business Awards



Counselman/Hunsaker & Associates

1970



COUNSILMAN/HUNSAKER  
AND ASSOCIATES

1993



COUNSILMAN • HUNSAKER  
*The Ultimate Aquatic Advantage*

2005



**Counselman • Hunsaker**  
AQUATICS FOR LIFE

2013

# PROCESS OVERVIEW

# Aquatic Master Planning Process

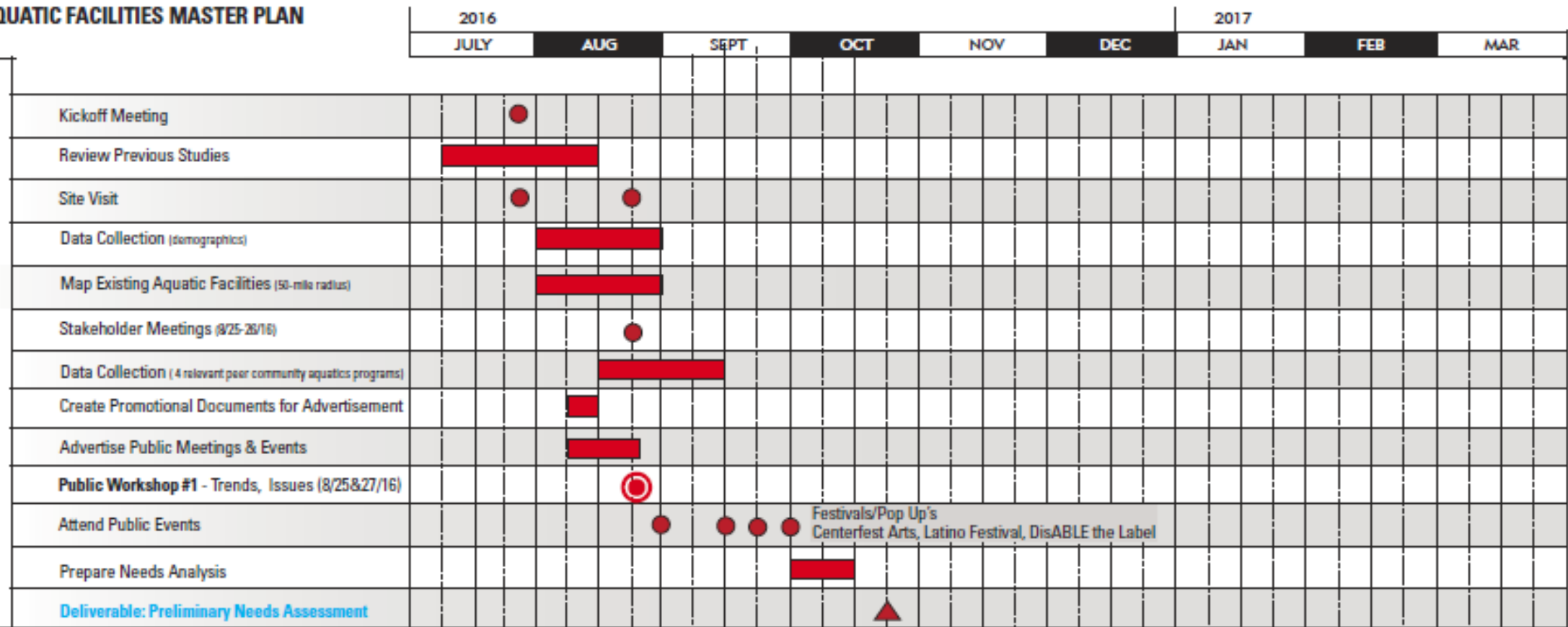
- Phase 1 - Data collection
- Phase 2 – Conceptual Plan Options
- Phase 3 – Conceptual Plan Recommendations
- Phase 4 – Final Master Plan

# **COMMUNITY UNDERSTANDING**

# CITY OF DURHAM AQUATIC FACILITIES MASTER PLAN

Revised 8-11-16

## PHASE 1 DATA COLLECTION



## PHASE 2 CONCEPTUAL PLAN OPTIONS

PHASE 2 CONCEPTUAL PLAN OPTIONS	Prepare up to 3 Concept Plan Options (5-year plan)																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																								
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### PHASE 3 CONCEPTUAL PLAN RECOMMENDATIONS

[illegible]

## PHASE 4 FINAL MASTER PLAN

[illegible]

# Existing Facilities

- Long Meadow Pool – 1963 (53 years)
- Forest Hills Pool – 1926 (90 years)
- Hillside Pool – 2000 (16 years)
- Edison Johnson Aquatic Center – 1993 (23 years)
- Campus Hills Aquatic Center – 1990 (26 years)
- East End Park Sprayground – 1999 (17 years)

*Typical life of an aquatic center is 30-50 years. Major renovations are required every 10-15 years in order to keep up with changes in demographics and community expectations.*

# Types of Obsolescence

## Physical Obsolescence

- Aging Facility
- Codes and Standards

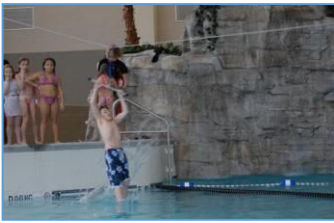
## Functional Obsolescence

- Definition of Aquatics
- User Expectations

# Change in Codes and Standards

- New Knowledge
  - Chloramines
  - RWI's
- Modern Technologies
  - LEED
  - Reduced Maintenance
- Industry Expectations
  - Regulatory Agencies (NCAA, FINA, etc.)
  - User Environment

# Change in Experience



- Entertainment value
- Extreme
- Creature comforts
- Activity specific design solutions
- Increased customer service
- Active and Passive Recreation



# AUDIT RECAP

- **Long Meadow Pool, Forest Hills Pool** - both exceed industry standard lifespans.
  - **Hillside Pool** - can potentially extend its lifespan up to 25 years with appropriate leak repairs.
  - **Edison Johnson Aquatic Center, Campus Hills Aquatic Center** - dehumidification units should be replaced.
  - **East End Park Sprayground** – Some repairs recommended
- 
- \$2,374,225 total in recommended repairs and renovations.

# POPULATION

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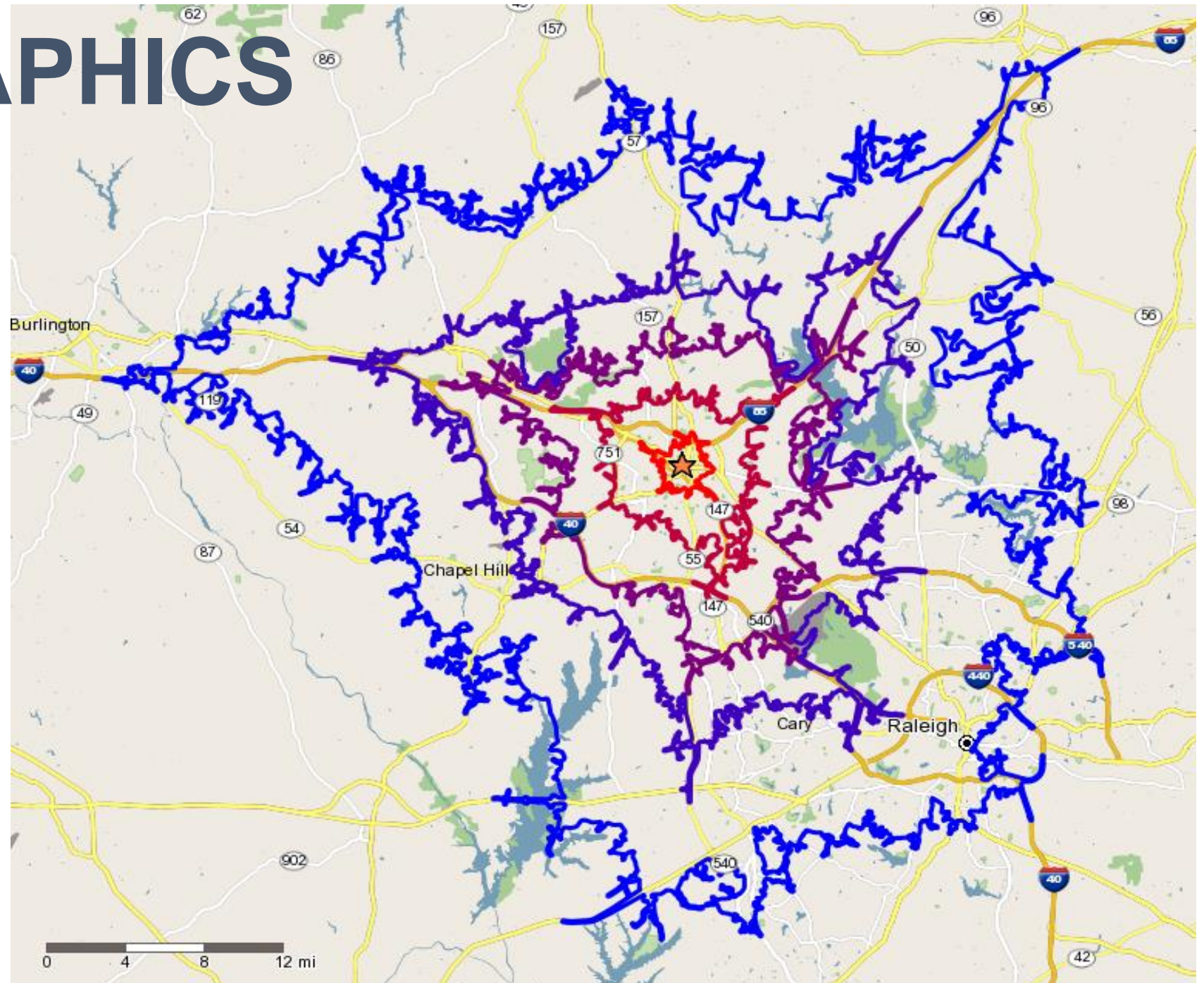
## MARKET AREA POPULATION BY DISTANCE

Source: Alteryx

# DEMOGRAPHICS

# DRIVE TIME

- 5 Minutes
- 10 Minutes
- 15 Minutes
- 20 Minutes
- 30 Minutes



# AGE DISTRIBUTION

## MARKET AREA AGE DISTRIBUTION

Age Groups	0 to 3 Miles		3 to 5 Miles		5 to 10 Miles		10 to 15 Miles		15 to 25 Miles		Durham, NC		U.S. Age
	#	%	#	%	#	%	#	%	#	%	#	%	Population
Age 0-4	6,649	7.2%	6,886	7.5%	11,289	6.5%	15,316	5.7%	48,710	6.4%	18,789	7.4%	6.5%
Age 5-9	5,603	6.1%	6,162	6.8%	10,617	6.1%	17,579	6.6%	53,236	7.0%	15,921	6.3%	6.5%
Age 10-14	4,918	5.3%	5,684	6.2%	9,906	5.7%	17,981	6.7%	53,281	7.0%	13,919	5.5%	6.6%
Age 15-19	9,139	9.9%	4,877	5.3%	8,500	4.9%	20,966	7.8%	54,366	7.1%	16,758	6.6%	6.9%
<b>Subtotal</b>	<b>26,309</b>	<b>28.6%</b>	<b>23,609</b>	<b>25.9%</b>	<b>40,312</b>	<b>23.3%</b>	<b>71,842</b>	<b>26.8%</b>	<b>209,593</b>	<b>27.5%</b>	<b>65,387</b>	<b>25.7%</b>	<b>26.5%</b>
Age 20-24	10,449	11.4%	5,624	6.2%	10,622	6.2%	23,084	8.6%	54,927	7.2%	20,369	8.0%	7.1%
Age 25-29	8,496	9.2%	8,944	9.8%	15,711	9.1%	19,057	7.1%	54,129	7.1%	25,298	9.9%	6.8%
Age 30-34	7,862	8.5%	8,782	9.6%	15,100	8.7%	19,520	7.3%	53,568	7.0%	24,077	9.5%	6.6%
Age 35-39	6,295	6.8%	7,049	7.7%	13,225	7.7%	19,701	7.3%	54,997	7.2%	19,337	7.6%	6.3%
Age 40-44	5,789	6.3%	6,428	7.0%	12,979	7.5%	20,688	7.7%	59,406	7.8%	17,592	6.9%	6.8%
Age 45-49	5,283	5.7%	5,602	6.1%	11,601	6.7%	19,790	7.4%	55,812	7.3%	15,355	6.0%	7.1%
Age 50-54	5,162	5.6%	5,566	6.1%	11,640	6.7%	18,816	7.0%	54,343	7.1%	15,327	6.0%	7.3%
Age 55-59	4,718	5.1%	5,177	5.7%	11,240	6.5%	16,530	6.2%	46,210	6.1%	14,347	5.6%	6.5%
Age 60-64	3,885	4.2%	4,463	4.9%	10,110	5.9%	13,307	5.0%	37,392	4.9%	12,399	4.9%	5.7%
Age 65-69	2,507	2.7%	3,167	3.5%	7,617	4.4%	9,986	3.7%	29,433	3.9%	8,638	3.4%	4.2%
Age 70-74	1,689	1.8%	2,115	2.3%	4,740	2.7%	6,352	2.4%	19,153	2.5%	5,578	2.2%	3.1%
Age 75-79	1,256	1.4%	1,612	1.8%	3,103	1.8%	3,878	1.4%	13,339	1.8%	3,954	1.6%	2.4%
Age 80-84	1,050	1.1%	1,299	1.4%	2,217	1.3%	2,716	1.0%	9,694	1.3%	3,046	1.2%	1.9%
Age 85+	1,301	1.4%	1,804	2.0%	2,458	1.4%	2,790	1.0%	10,110	1.3%	3,850	1.5%	1.9%
<b>TOTAL:</b>	<b>92,051</b>	<b>100.0%</b>	<b>91,241</b>	<b>100.0%</b>	<b>172,675</b>	<b>100.0%</b>	<b>268,057</b>	<b>100.0%</b>	<b>762,106</b>	<b>100.0%</b>	<b>254,554</b>	<b>100.0%</b>	<b>100%</b>
Median Age	30.5		34.2		36.7		35.1		35.8		33.3		37.0

Source: Alteryx

Age distribution is another population characteristic used to determine the type and level of use of any type of program. Aquatic facilities primarily serve two age groups; families with young children and aging senior population.

# INCOME

## MARKET AREA INCOME

Radius	Per Capita Incomes		Median Household Incomes	
	Dollars	Index	Dollars	Index
0 to 3 Miles	\$21,294	0.80	\$33,010	0.63
3 to 5 Miles	\$29,676	1.12	\$50,507	0.96
5 to 10 Miles	\$44,474	1.68	\$73,503	1.40
10 to 15 Miles	\$42,330	1.60	\$75,738	1.44
15 to 25 Miles	\$33,484	1.27	\$62,510	1.19
Durham, NC	\$30,286	1.14	\$50,025	0.95
Total U.S.	\$26,464	1.00	\$52,599	1.00

Source: Alteryx

To a certain degree, the likelihood of residents to engage in aquatics depends on their ability to pay for admission and program fees.

# AQUATIC TRENDS

# 1950 – 1990 PLANNING CRITERIA

- Old NRPA Standard - One Pool per 20,000 Population  
*(Neighborhood Pool Concept)*
- Typical Pool : 4-8 Lap Lanes, Diving Board, Wading Pool
- Admission \$.50 to \$1.00
- Most Used by Children and Lap Swimmers



# ALONG CAME THE WATERPARK....

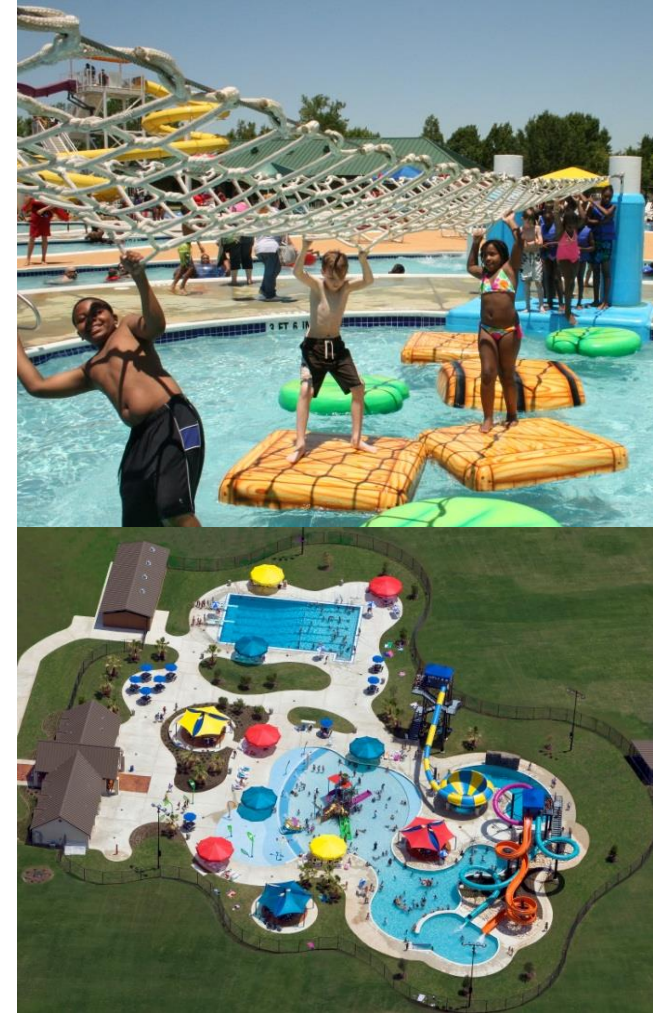
(1970 - 1980)

- Pointe Mallard - Decatur, AL  
1<sup>st</sup> Wave Pool 1970
- Wet'n Wild - Orlando, FL 1977
- Hyland Hills Water World - CO 1979
- Municipal Recreation Pools Started Incorporating Features from Waterparks to Create Family Aquatic Centers
- 1990's St. Charles, MO Built Three Family Aquatic Centers



# CURRENT PLANNING CRITERIA 1990 - PRESENT

- New Standards – One Pool per 50,000 or More Population (Community Pool Concept)
- Typical Pool: More Fun Amenities (Water Slides, Lazy Rivers, and Children's Play Structures)
- Admission \$5.00 and Up
- Most Used by Families with Children - Something for Everyone!



# Aquatic User Groups

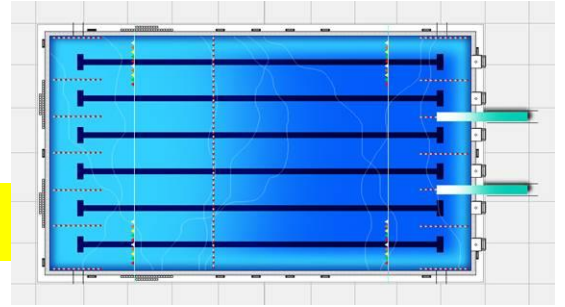
- Recreation
- Instructional
- Competition
- Wellness and Therapy



# AQUATIC FIELDS OF PLAY

6 25-Yard Lanes

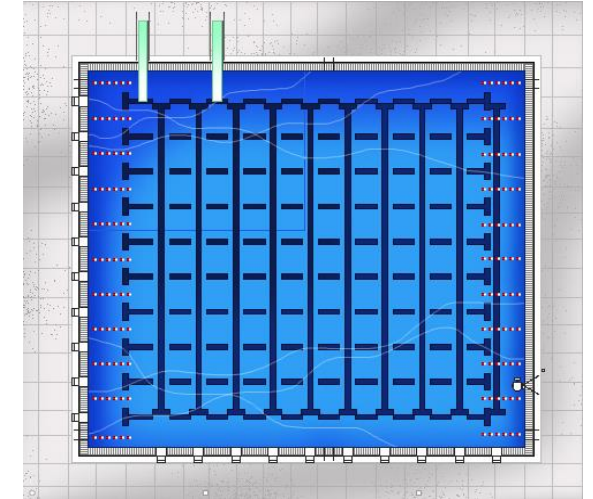
Similar to Campus Hills and Edison Johnson Pools



25-Yard By 25-Meter

11 25-Yard Lanes

10 25-Meter Lanes

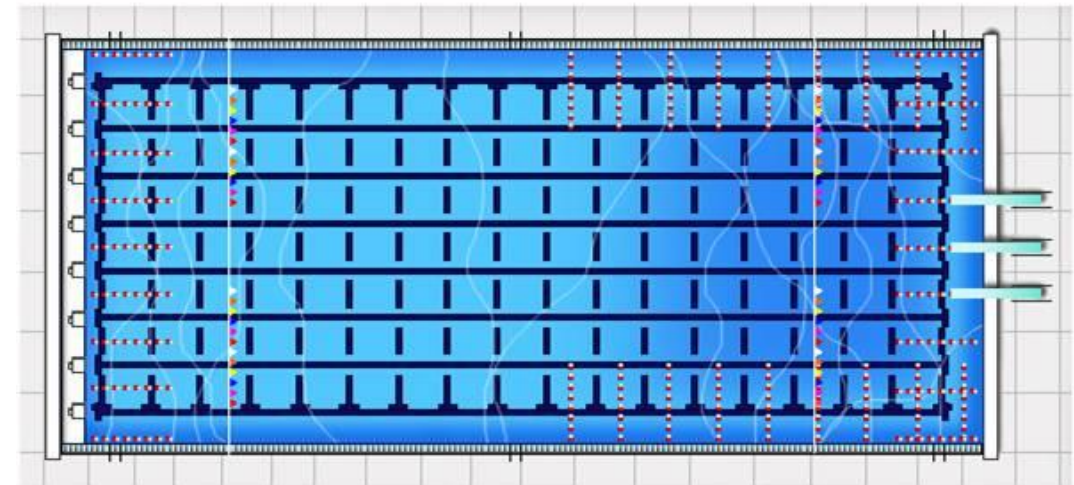


50-Meter by 25-Yard

8 or 10 (50-Meter Lanes)

17-22 (Cross Course

25-Yard Lanes)



# WELLNESS AND THERAPY

- Fastest Growing Aquatic User Group
- Dedicated Pools
- Therapy Programs
- Water exercise classes
- Water Aerobics classes
- Fitness Classes



# LESSONS – LEARN TO SWIM, INSTRUCTION

- Learn to swim
- Water safety instruction, Lifeguard instruction
- Life safety skills
- Survival swimming
- Scuba
- Other aquatic skills



# RECREATION

- Tots
- Families
- Teens
- “Family Aquatic Center”



# A PROPOSED GOLD STANDARD

- One Indoor/Outdoor Centralized Mega Recreation Center Facility w/ Indoor Competition and Wellness Pools for every 100,000 to 400,000 residents
- Provide one recreational use outdoor family aquatic center with Fun Amenities (Water Slides, Lazy Rivers, and Children's Play Structures) plus lap lanes for every 50,000 to 100,000 residents.



# NATIONWIDE RECREATION AQUATIC TRENDS

- Use of *Splash Pads* to Replace Smaller Neighborhood Pools

Costs \$300K to \$1M



- Replacement of Old Style Recreation Pools with Bigger and Better *Family Aquatic Centers*

Costs \$3M to \$15M



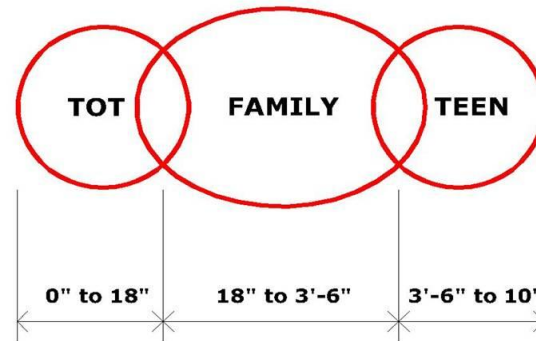
# WHAT IS A SPLASH PAD?

- An interactive children's water play area characterized by 0" to 6" of water with vertical water sprays, geysers, water tunnels, spray cannons, etc.
- Other terms: "Water Sprayground", "Interactive Fountain", and Water Play Area
- Lifeguard and fencing not required



# WHAT IS A FAMILY AQUATIC CENTER?

- More Fun Features (Water Slides, Lazy Rivers, and Children's Play Features)
- Zero Beach Entry to 3'-6" Depth Pool
- Teen Features (Drop Slides, Diving Boards, etc.)
- More Amenities (Shade, Seating, Concessions)
- Areas for Lesson Programming, Lap Swimming, and Recreation



# Green Ideas



# Water Efficiency

## Regenerative Media Filtration

- Consider reusing pool wastewater from backwashing and deck drains for toilets.
- Use high efficiency fixtures and sensors to reduce potable water demand.
- Use filter system that uses less water
  - RMF filtration system
  - Less frequent backwash
  - High rate sand typical backwash 5000 gallons of water per filter
  - RMF Filter backwash - 200-600 gallons of water
  - Higher first dollar cost - \$50,000+/filter



# Energy & Atmosphere

## Variable Frequency Drive Motors

- Install metering equipment for pool fill lines, waste lines, pump motors, pool heaters, pool chemistry controllers, etc.
- Maximize Pump & Motor efficiencies
  - SPCS
  - VFDs



# Energy & Atmosphere

## Geothermal / Solar Heating & Pool Covers

- Utilize a Pool Cover
- Specify Solar or Geothermal Pool Water Heating
  - Water source heat pump
    - Need source water from lake, canal, aquifer
    - 1<sup>st</sup> cost 25-30% more – drilling and unit cost
    - More efficient 15% of typical operating cost for gas



# Example Facilities

# Example 1: Sprayground

## Aquatic Elements

- Aquatic playground featuring many interactive water features.
- Various sizes and attractions available
- No standing water



## Example 2: Small Family Aquatic Center

### Aquatic Elements

7,100 sq. ft. Multi-purpose Recreation Pool

- Six-eight lane 25-yard competition pool
- Play structure with water slides
- Several spray/splash features
- Small kiddie slide
- Large water slide



## Example 3: Medium Family Aquatic Center

### Aquatic Elements

17,000 sq. ft. Recreation Pool

- Open flume waterslide
- Closed tube waterslide
- Water vortex
- 430 ft. long lazy river
- Wet deck social space
- Water crossing feature
- Zero entry beach
- Bowl slide
- Interactive play structure
- 600 sq. ft. splash play area



## Example 4: Large Family Aquatic Center

### Aquatic Elements

- 50-meter competition pool
  - moveable bulkhead
  - 1 and 3-meter springboards
- 25-yard, eight lane fitness and instructional pool
- Therapeutic spa
- Children's splash pad with interactive aquatic play features
- 12,500 sq. ft. leisure pool with multi-play structure with tipping bucket
  - 600-foot long lazy river
  - Three large waterslides including body, tube and speed slides



## Example 5: Basic Indoor Pool

### Aquatic Elements

5,400 sq. ft. Indoor Multi-Purpose Pool

- Six 25-yard lap lanes
- Intermediate depth lesson area with grand stair entry and underwater bench seating
- Shallow play area with terraced step entry, bubbler features, tot slide, children's interactive play feature, and ADA compliant sloped entry
- New pool mechanical systems including pool heating and cooling capabilities

1,500 sq. ft. Outdoor Sprayground

- Complete with a variety of water features



## Example 6: Small Indoor Pool

### Aquatic Elements

7,500 sq. ft. Multi-Purpose Pool

- Zero beach entry
- Zip line
- Three 25-yard lap lanes
- Interactive play feature
- Current channel
- Waterslide
- Aquatic rock-climbing wall
- Wet deck

3,000 sq. ft. Outdoor Sprayground with numerous water features



# Example 7: Medium Indoor Pool

## Aquatic Elements

### 25 Yard Lap Pool

- 1-m diving
- Stair entry

### 2,300 sq. ft. Recreation Pool

- Waterslide
- Current channel
- Three stair entries
- Tot area with play features and water features
- Vortex

### 100 sq. ft. Spa

- Hydrotherapy bench



# Example 8: Large Indoor Pool

## Aquatic Elements

### 25 Yard by 25 Meter Competition Pool

- Two three-meter diving boards
- Spectator seating for 175

### 3,000 sq. ft. Leisure Pool

- 30 ft. high slide which exits the building in an enclosed tube
- 20 ft. high open-flume slide
- 300 sq. ft. spa
- Vortex
- Current channel
- Open shallow water area with zero-depth entry
- Interactive play features



# Example 9: Indoor Competition Venue

## Aquatic Elements

### 50 Meter Competition Pool

- Eight 9-ft. wide 50-meter lap lanes
- Twenty 25-yard cross course lanes
- Two 1-meter springboard dive stands

### 3,000 sq. ft. Recreation Pool

- Five 25-yard fitness lap lanes
- Underwater bench seating
- ADA accessible chair lift
- Stair and ramp entries



# AQUATIC TRENDS AND CONSIDERATIONS FOR CITY OF DURHAM AQUATIC MASTER PLAN

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